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ABSTRACT

Project SEE was designed as a structured kindergarten and first grade program for the development of visual perception. Short daily lessons were given to an entire kindergarten class simultaneously and were centered around a set of 40 cards containing various lines and shapes. Children were asked to analyze and describe these elements on the cards, locate objects in the room containing the elements, and then replicate the design themselves on a work sheet. The visuals start with a single line element and progress with increasing difficulty to shape/line combinations. In an attempt to show the growth generated by the pilot program, children were pre- and posttested in experimental and control classes with the 'A' (pretest) and 'B' (posttest) editions of the Knobler Perception Development Series. Positive results were found, however indications were that training should continue for more than a year. (CS)

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Learning to See is . . . Seeing to Learn 2

A second year report of Title 3 Project **SEE**

Union Township Board of Education, Union, New Jersey 07083

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ACKNOWLEDGEMENTS

The success of PROJECT SEE is due in great part to the tireless efforts of many people committed to the improvement of education.

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To Charles Murphy, principal of Battle Hill School, for his total cooperation in the structuring of the pilot classes to satisfy the needs of the program.

To Michael Bury, principal of Washington School and administrative advisor to the kindergarten teachers, for his assistance in the district wide expansion of the program.

To Dr. Guy Barbato, Nathan Fletcher, James Holcomb and Floyd Lee, principals of the remaining elementary schools for graciously allowing the program to be installed and of their kind reception of the many visitors the program brought to their schools.

To our Advisory Committee: Sanford Greenwood, Dr. Steve Eisler, Dr. Daniel Maisel and Frank Moretti, for their interest and helpful suggestions.

To Wilma Lake, for whom nothing was too hard or too much or took too long - and for her belief in and committment to SEE.

To Al Kochka, State Consultant on Art and the Humanities who, as Project Expiditer, asked the right questions.

To Dr. James Caulfield, Assistant Superintendent of the Union Township Schools, who led the way through the organizational maze of paperwork and reports and served as the practical anchor to our, at times, impractical imaginative ramblings... we, the staff of PROJECT SEE wish to extend our utmost thanks and appreciation. Without your efforts it couldn't be done.

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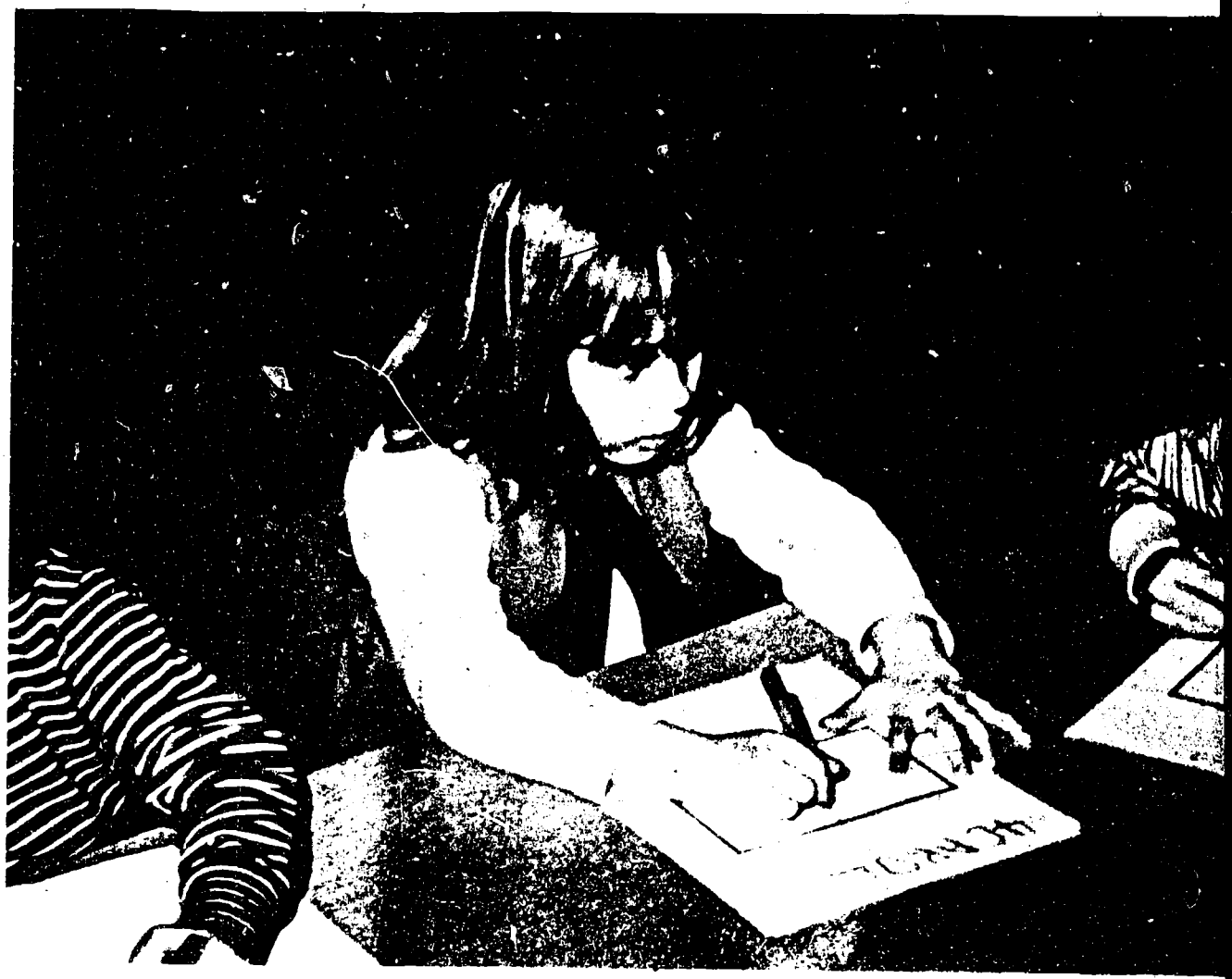

Learning to See is ...Seeing

to Learn 2

Title III Project 71-084

Board of Education
Union, N.J. 07083

Dr. Fred Stahuber
Superintendent
Milton Knobler
Project Director

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OUR GOAL

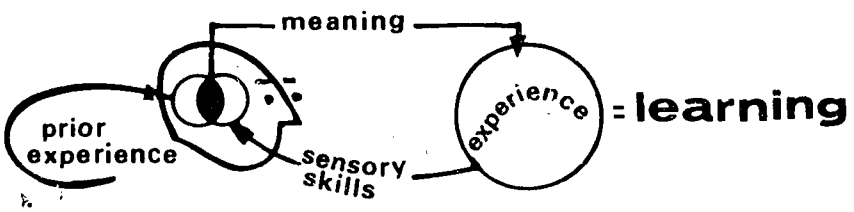
In a word, the 'raison d'etre' of education is LEARNING. This elusive process, which, all too often does not come about in the classroom, is something, we on the level of practical (as opposed to theoretical) education normally take for granted. We have assumed that what we **teach** - children **learn** - and, if they don't, something is wrong with them. At question here is that if children do not **'learn'** what we **'teach'** - why?

Can we lay the blame on the student, or the teacher, or on socio - cultural - economic inhibitors? Perhaps, it might serve us well to be simplistic rather than philosophically and psychologically profound and look to determine whether the child has been taught to learn.

Teaching to learn is an interesting theory -especially in an educational structure designed for the dissemination of information. But is learning the result of the reception of information or of its processing? If we logically conclude that data must be **processed** to be **meaningful** it would follow that we must **prepare** children for **learning** before we can expect them to do so. **This is the goal of PROJECT SEE.**

LEARNING: OUR BASIS

To teach children how to learn we first had to define our concept of the learning process. **Simplicity** became our key: simplicity of **concept**, simplicity of **understanding** and simplicity of **implimentation.** Learning was seen as the meaningful culmination of the interaction of a receptor (the person doing the learning) and an experience. We saw experience as being existant - to be conveyed to the receptor through the senses - there to be processed in light of prior experiences giving meaning to the particular experience. **This total cycle made up the learning process.**



It followed then that there were two phases of this process that could be subject to control (1) the sensory skills necessary to convey stimuli and (2) the bank of prior experience. These then pointed out our area of concentration. We first had to make sure that the **stimulus** of an experience reached the receptor and that, once there, it could be meaningfully **processed - this was the basis for the PROJECT SEE program.**

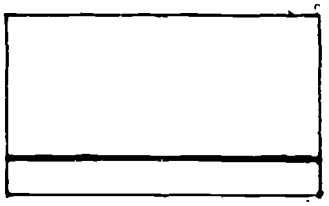
STRUCTURE

The acknowledged fact that 84% of all learning is visually based directed our primary thrust in skill development - **we had to train children to see what they looked at.** Since previous investigations of childrens' perception have essentially studied them as they were, we had no precedent as to how they could be if they were trained, so any program designed to this end had to be, of necessity, experimental in nature.

It was decided that (1) the program must be of an **'on-going' nature** - that continuity was essential to skill development, (2) that it should be of **short** daily duration and offer enough **variety** as to keep sustained interest, (3) that it had to be **internalized** by the children rather than **'given'** to them by the teacher, (4) that the approach should be **multi-modality** and **multi-sensory** for the total development of the child and (5) that it should be introduced at the earliest possible time - preferably kindergarten.

A program for the development of visual perception must, most logically, be approached visually. So **PROJECT SEE** centered its instruction around a set of visual experiences to be **analyzed** and **exposited, related** to, and **replicated.** These visuals, forty (40) in number, started with the most elementary (1) single line element and progressed with increasing difficulty to (2) two non-interacting lines, (3) two interacting lines, (4) elements made up of three components, (5) simple shapes, (6) shape/line combinations and (7) shape/shape combinations. These were placed in a frame of reference so that the children would see them as part of a greater totality (gestalt).

VISUALS: LEVEL 1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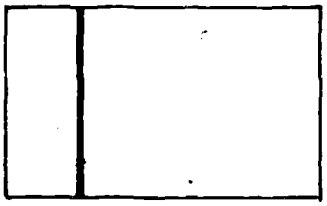
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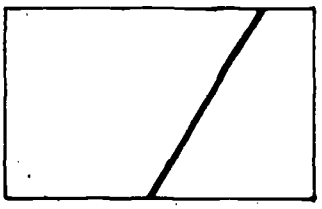
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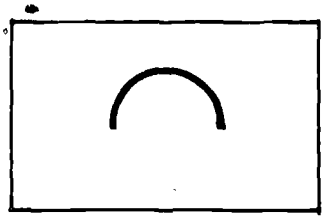
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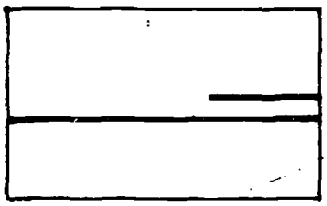
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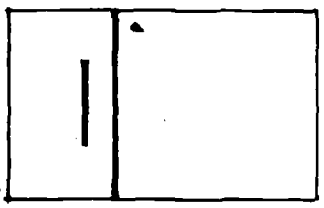
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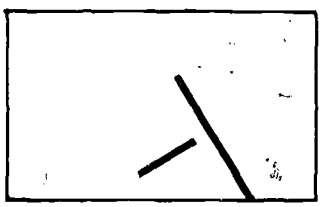
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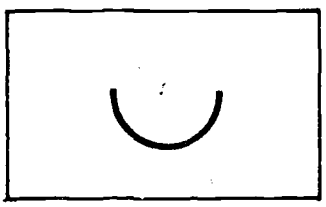
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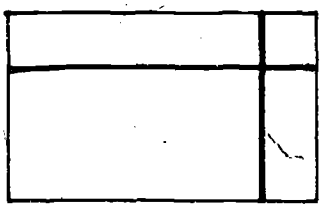
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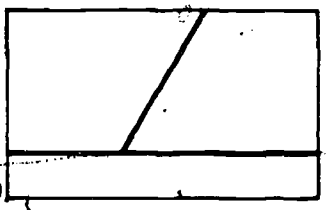
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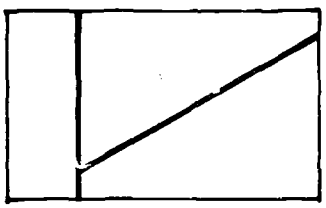
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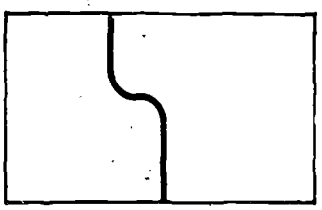
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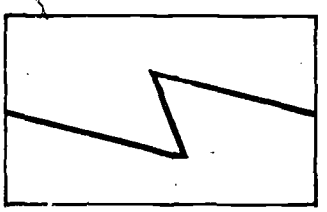
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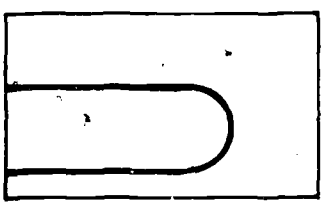
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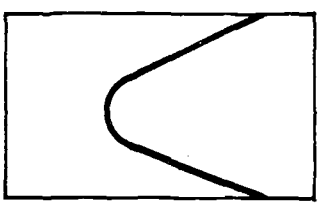
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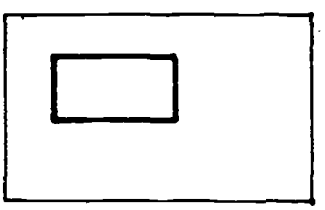
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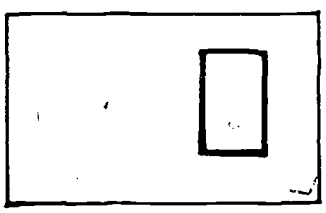
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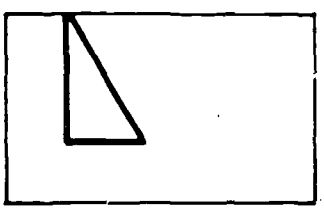
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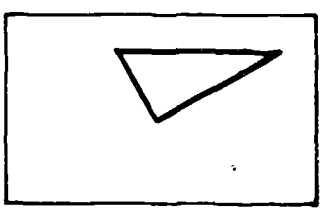
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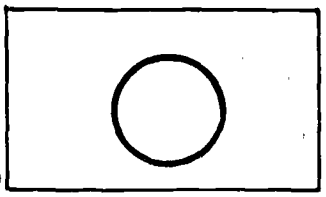
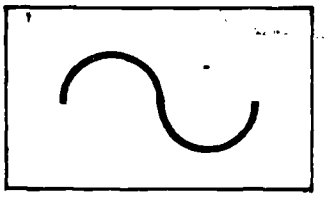
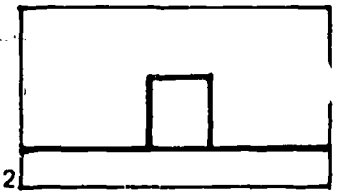
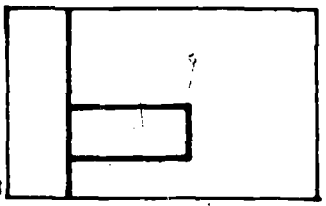
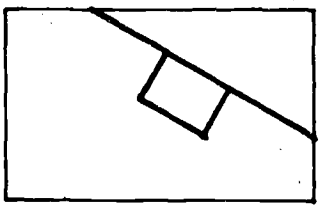
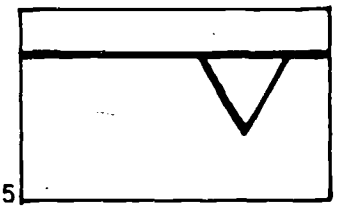
20 

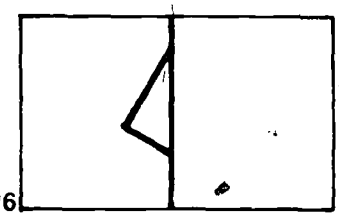
21 

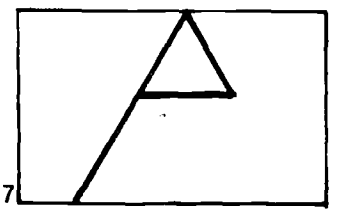
22 

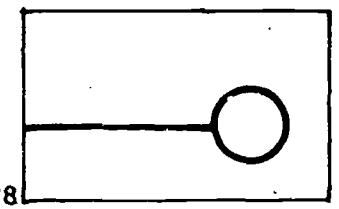
23 

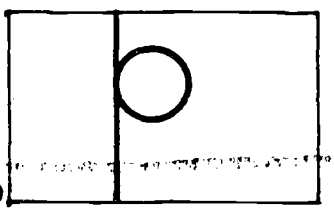
24 

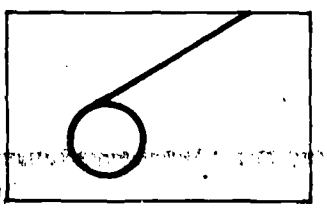
25 

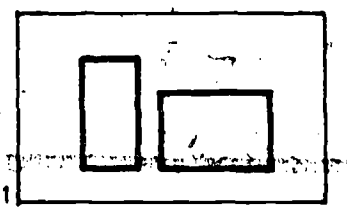
26 

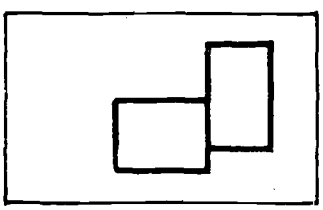
27 

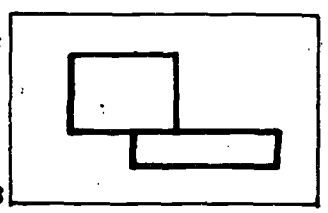
28 

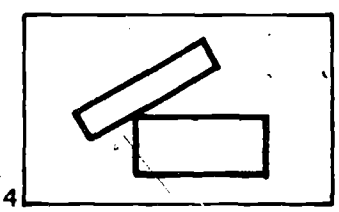
29 

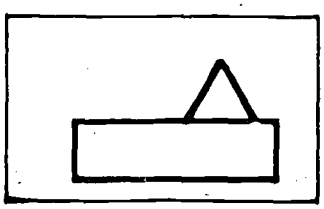
30 

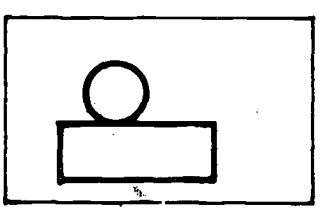
31 

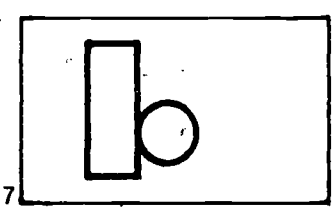
32 

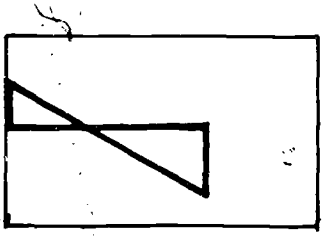
33 

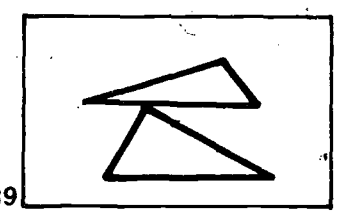
34 

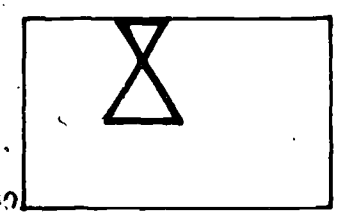
35 

36 

37 

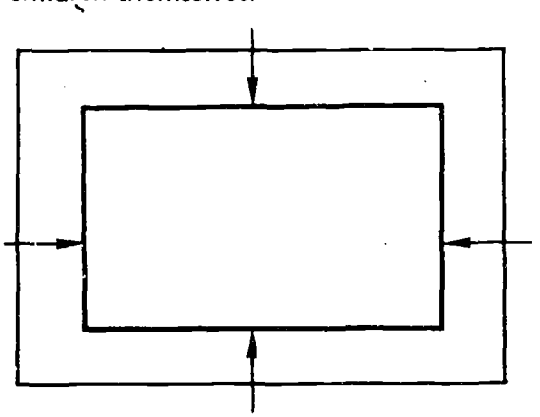
38 

39 

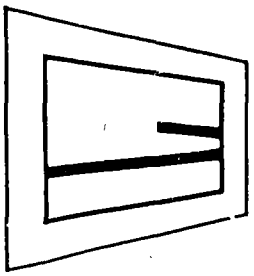
40 

METHODOLOGY

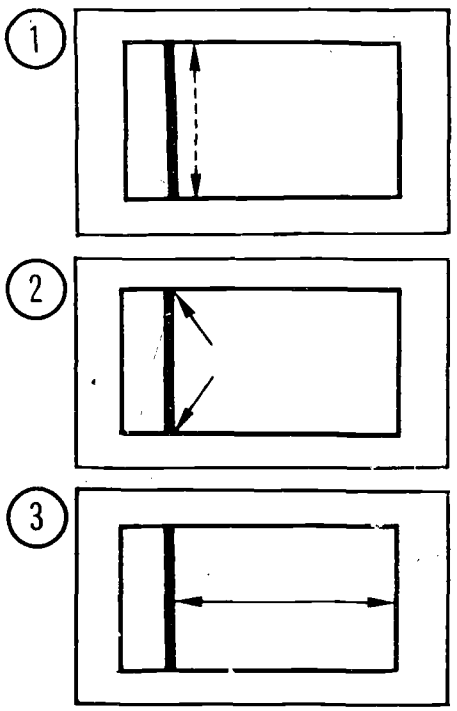
Our goal of internalizing the learning dictated our basic methodology - the teacher could **not** tell the children - **they had to tell the teacher. This placed the onus of learning on the child and made the teacher a provider of experience and a director of its exposition.** We assumed **no** prior knowledge on the part of the children (even though it did exist in varying degrees). We wanted to structure the pattern of learning so we had to also structure the experiences of the child leading to such learning. Our first deposit to the childrens' experience bank was the frame that defined the space in which the elements were placed. This we gave to the child as a starting point but **all** other vocabulary was to be generated by the children themselves.



The children were seated in front of the visual which was placed on an easel or other suitable stand. Care was taken to place the children so as to avoid peripheral viewing since the ensuant distortion would offer an essentially different image.



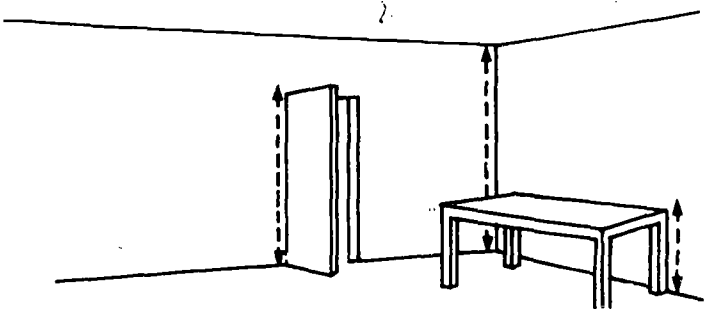
They were directed to look **carefully** at the card and **describe** what they saw. The teacher directed them toward the exposition of (1) the **nature** of the element itself, (2) its **relationship** to tne frame and (3) its **position** in the space defined by the frame.



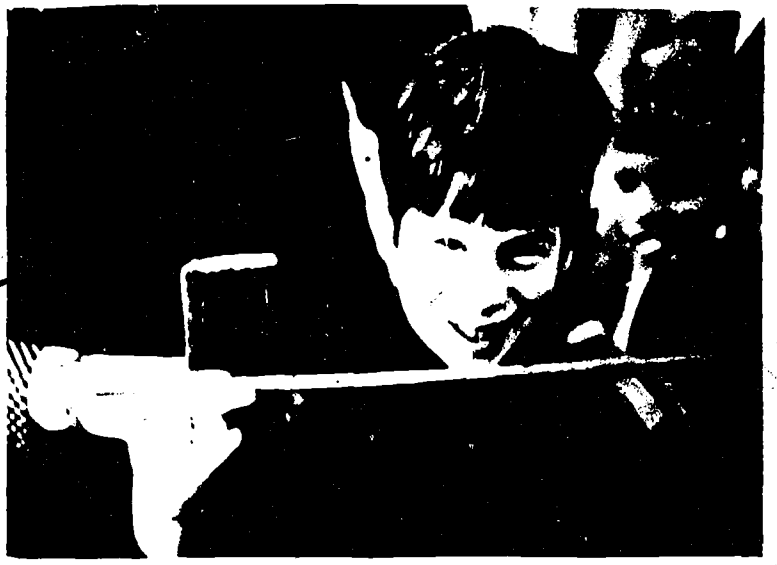
Tremendous restraint was placed on the teacher to not give the children the answers and to accept the childrens' descriptions as valid as long as they indicated that there had been perception. In the beginning the children did not know the commonly used vocabulary and therefore used any words at their command. A straight horizontal line might have been described as a line going from side to side or from the door to the window or from here to there. Eventually the children would recognize the need for some standardization of vocabulary and they either generated it from within their own peer group or looked to the teacher for the accepted terminology. At this point the teacher, if needed, offered the correct word.

All children were not given the opportunity to respond on any given day. Since the program was offered at least three times a week and preferably five (to assure continuity) each child got a chance and prolonging the exposition overly long could well make the program pall on the children.

When the element had been described in full the **second phase** of the daily program was started. Now the children were directed to **search** around the room and locate objects containing the element that had just been described. A vertical line may have been seen as the corner of the room, the leg of a table or the edge of a door. When the element

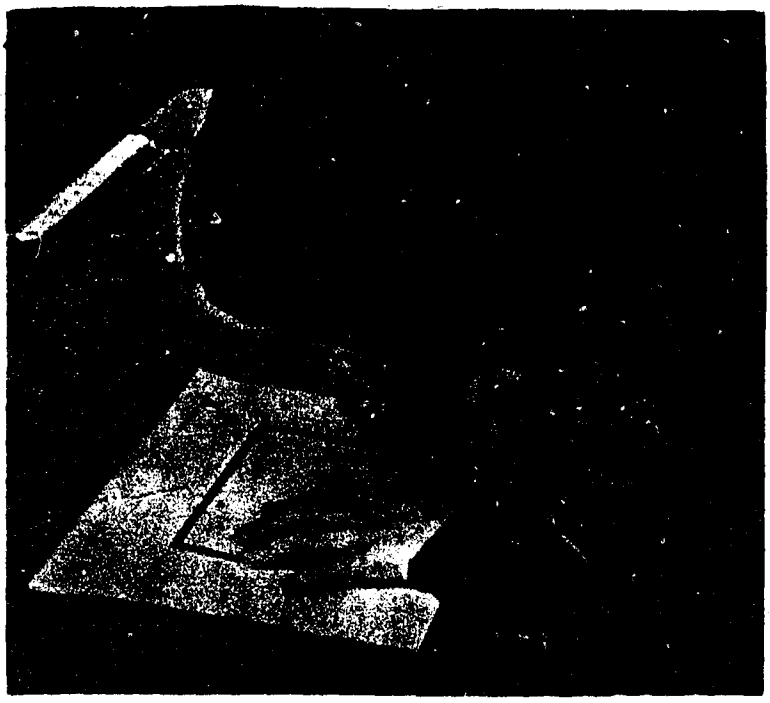


proved to be so complex as to make relating difficult it was handled in segments or constructed by the children using available objects. This phase shared **equally** in importance



with the descriptive phase in that we wanted to generate the concept of **applicability** and **out of context adaptation of learning**. Again we did not overly prolong this experience and the third phase of the program commenced.

The visual card was turned around so that it could not be seen. The children were given soft-lead primary pencils and work sheets on which was imprinted a frame proportional to the frame on the visual. We did not give the children erasers because we wanted to engender a positive attitude about the normalcy of error. Mistakes are inherent in the learning process and are nothing to be ashamed of. To so structure a program as to allow for no errors can be detrimental - children have a right to be wrong and we looked to establish a lack of fear of being wrong.

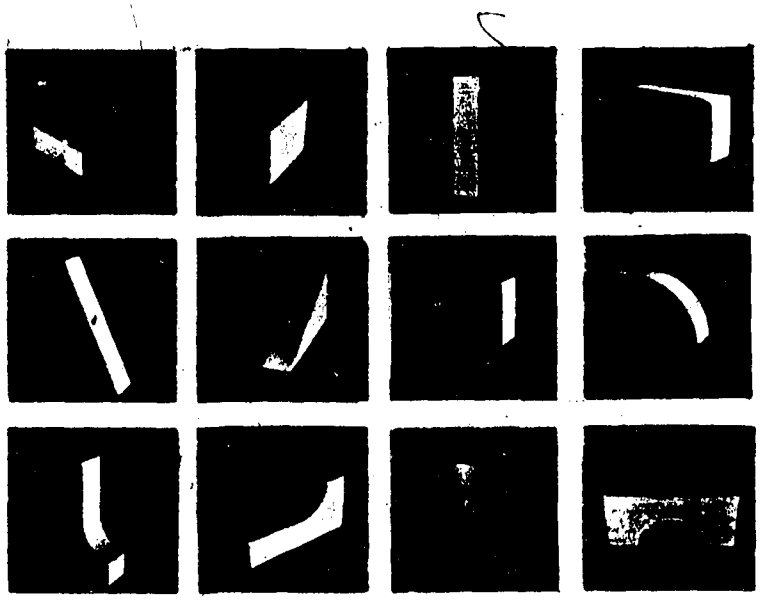


The children were seated so that they had a direct view of the card and when all were ready it was turned around and they were directed to look at it carefully and to copy what they saw. This replication phase is strictly another means of indicating perception and should not be construed as an art lesson. As the children worked the teacher moved from child to child observing their efforts. Children making obvious perceptual errors were asked to look again at the model

and compare it to what they had drawn. They must determine that an error had been made - not the teacher. They then crossed out the incorrect lines and redrew them. Should a child be unable to see the obvious errors repeatedly it may be an indication of some type of impairment and he should be referred for diagnosis. If at least half the class failed to replicate the element successfully we reintroduced it the following day and after minimal discussion it was re-replicated. However, since we wanted to avoid memory response this activity would not be repeated.

When all the children completed the replication the lesson was over for the day and the visual put away to be used only one more time - in the review section. The total daily lesson normally took no more than fifteen minutes, varying from lesson to lesson depending in the complexity of the visual.

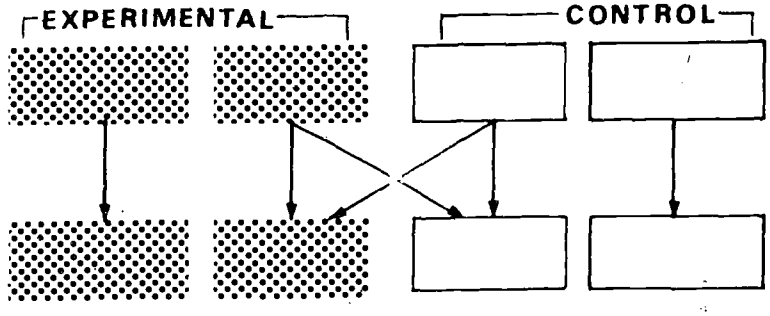
The review lesson took place at the completion of every four visuals. The children were given work sheets imprinted with four frames scaled proportionally to that of the model and the four elements just completed were shown again - to be replicated in the frame indicated by the teacher.



On the completion of the set of forty visuals we offered a set of large photographs of simple shapes. These were handled as were the linear visuals, being analyzed in terms of the shapes and the direction and length of the lines from which they were made. These too were then replicated.

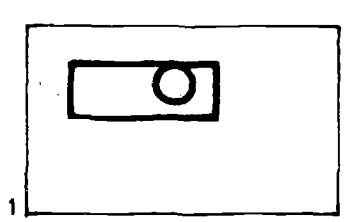
FIRST GRADE PILOT

Our original kindergarten classes have become the pilot classes for the second year of our program. The two experimental and two control classes were divided into one class made up entirely of children from the experimental classes which was kept experimental, one class made up entirely of children from the control classes which was kept as a control group, and two classes made up of children from both the experimental and control classes. One of these was made an experimental group and the other a control group.



VISUALS: LEVEL 2

Our program in first grade is essentially an extension of the kindergarten program keeping the same format but presenting more difficult and complex visuals. We started with a review of the last ten visuals used on the kindergarten level then progressed to (1) shape within shape combinations, (2) shapes intersecting and overlapping shapes and (3) shapes juxtaposed so as to give the illusion of a third dimension. These the children verbally articulated, related to reality and replicated as was done in the previous year.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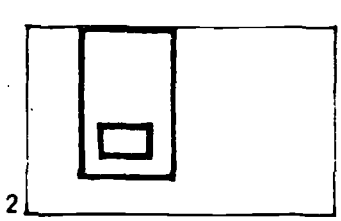
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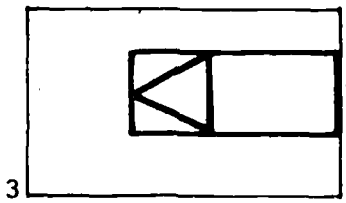
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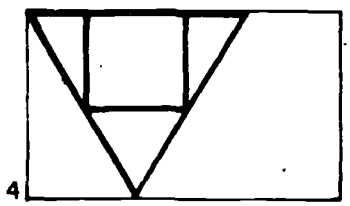
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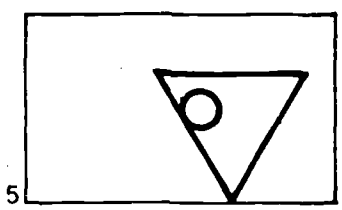
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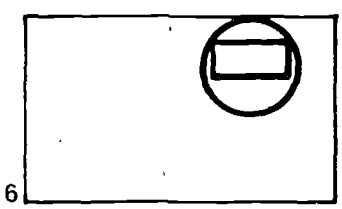
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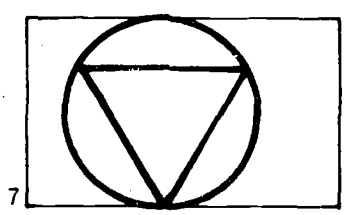
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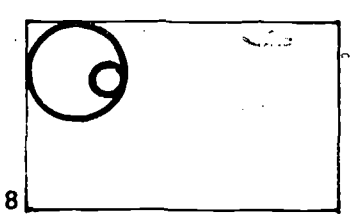
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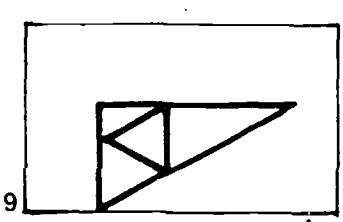
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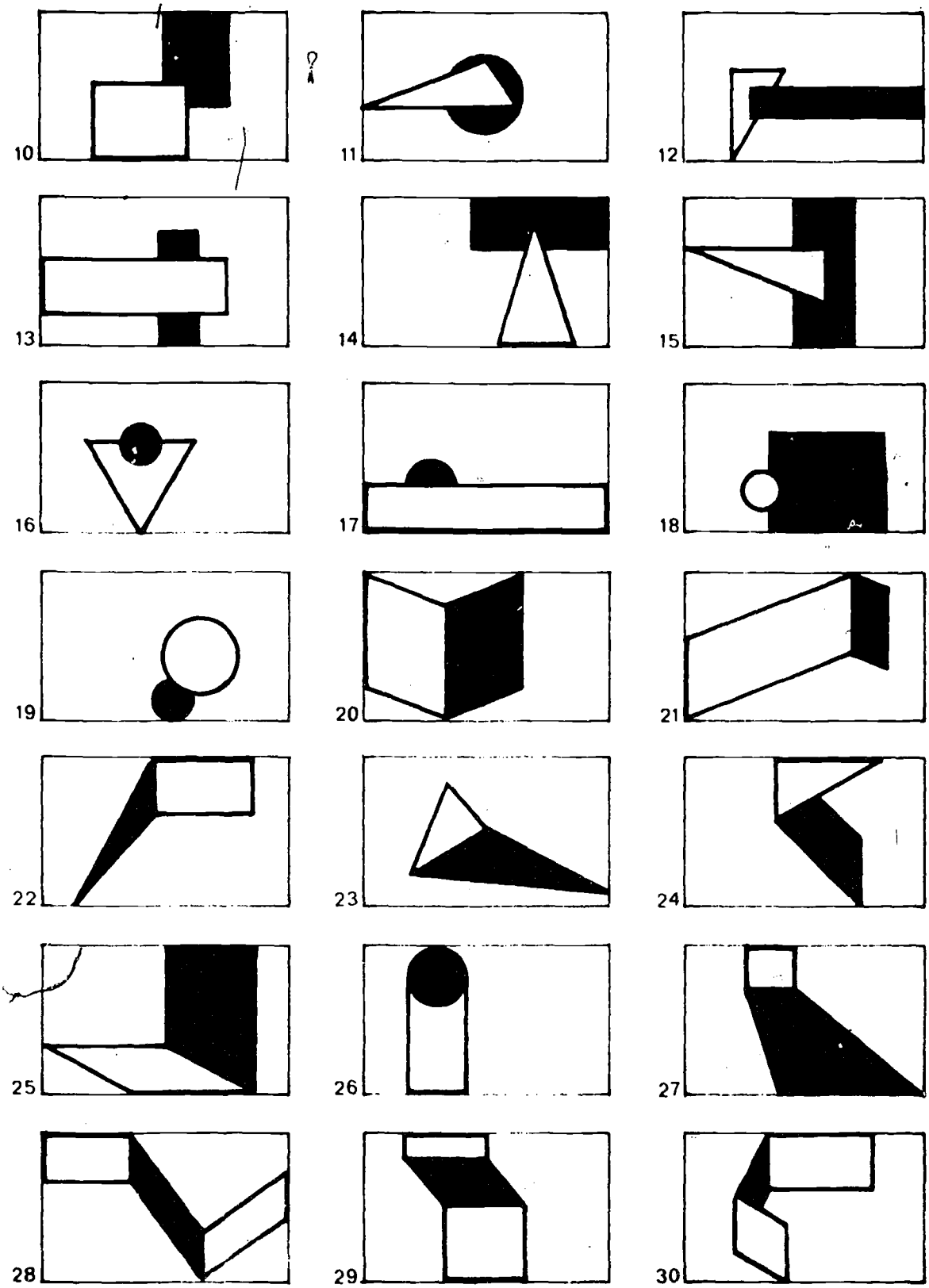
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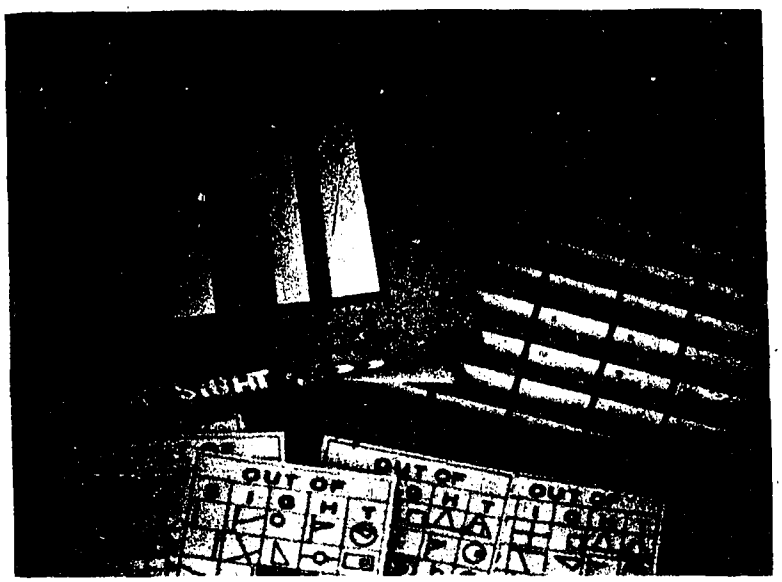
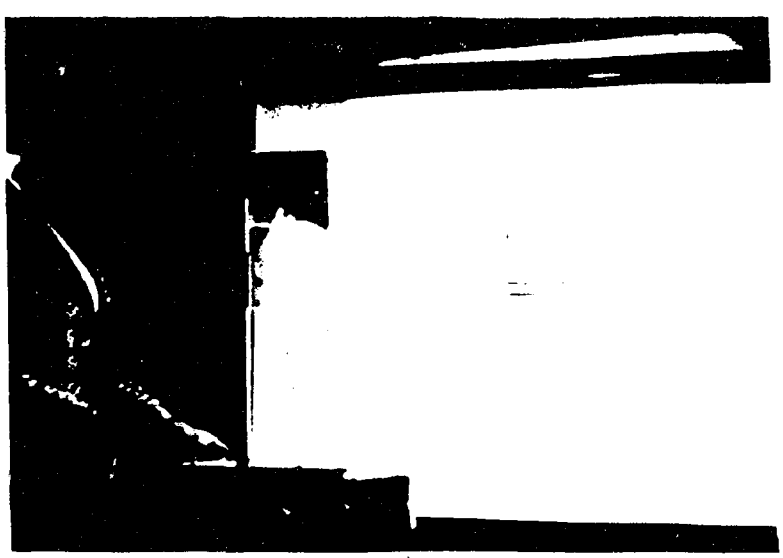
OUT OF SIGHT

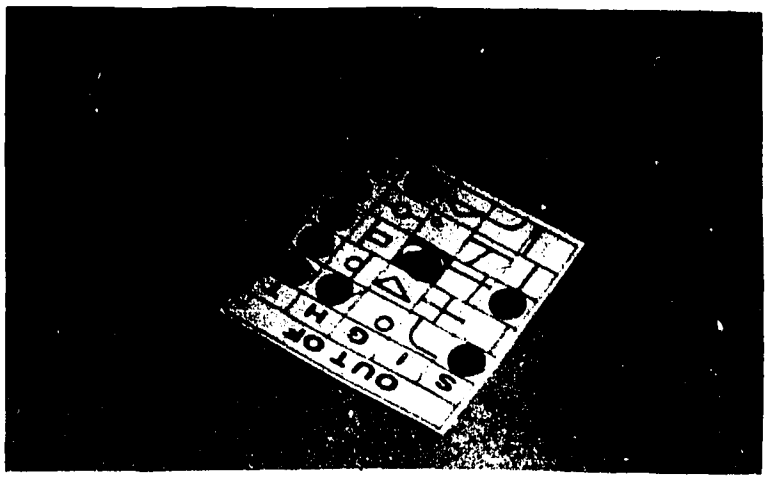
We have also provided as an enrichment experience the game, **'Out of Sight.'** Played like Bingo, each child is given a game



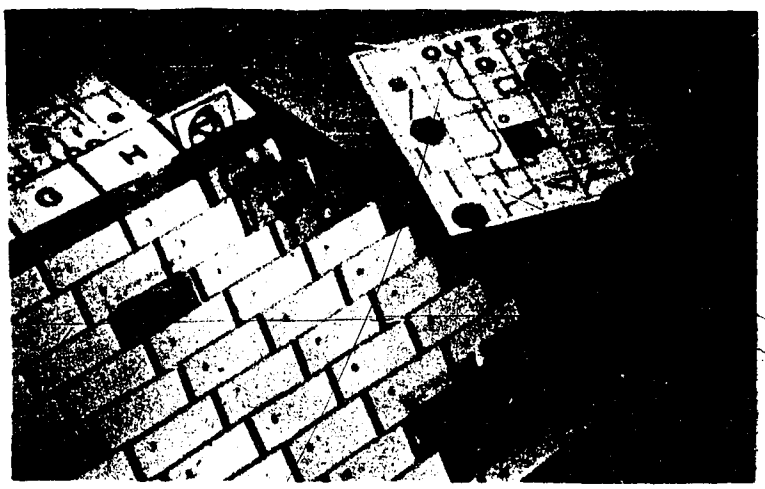
card on which are printed elements similar to those found on the instructional visuals. These are placed in rows under the letters S, I, G, H and T. The teacher is supplied with a set of



overhead transparencies of the visuals which she projects calling out the letter under which the visual might be found.



Those children having that element cover it with markers and the child who first completes the assigned game task calls, 'out of sight!' As in bingo a game may be won by the completion of a horizontal line, a vertical or oblique line, or even



letter forms. The winning card can then easily be checked against the transparencies that have been called. As with the instructional program this game has been designed for a total class involvement although it may be used with small groups if so desired.

EVALUATION

In an attempt to show the growth generated by our program we pre and post tested the children in both experimental and control classes with the 'A' (pre test) and 'B' (post test) editions of the **KNOBLER PERCEPTUAL DEVELOPMENT SERIES** which is structured into **three** tests of **ten** problems each, to be given **singly** on **three** consecutive days. The tests are constituted of a series of elements placed in frames of reference - these to be duplicated in blank frames adjacent to the individual problems. **We placed no time constraints on the completion of the test since we are interested in determining the degree of perception and not the speed of recognition.** Each component of the test has a maximum score potential of **three** points - **one** each for the correct replication of the (1) element, (2) its relationship to the frame and (3) its position in the space defined by the frame - with **thirty** points being a perfect score. Since we are working with children having only minimal motor control scoring will have to be somewhat **subjective** giving credit where **intent** is obvious but control lacking. To offest possible variation in scoring criteria all tests given and used for the determination of project data were scored by the same person.

We have **normed** the 'A' series of the test using scores from **626 children** tested during the school year 1972-73 and from the **100 children** in the pilot classes of 1971-72.

KNOBLER PERCEPTUAL DEVELOPMENT SERIES

Norms of Average scores of the 'A' edition

K1 : 16.264

K2 : 13.290

K3 : 13.843

In evaluating the data derived from our testing we have made comparisons of both the averages and the medians of the:

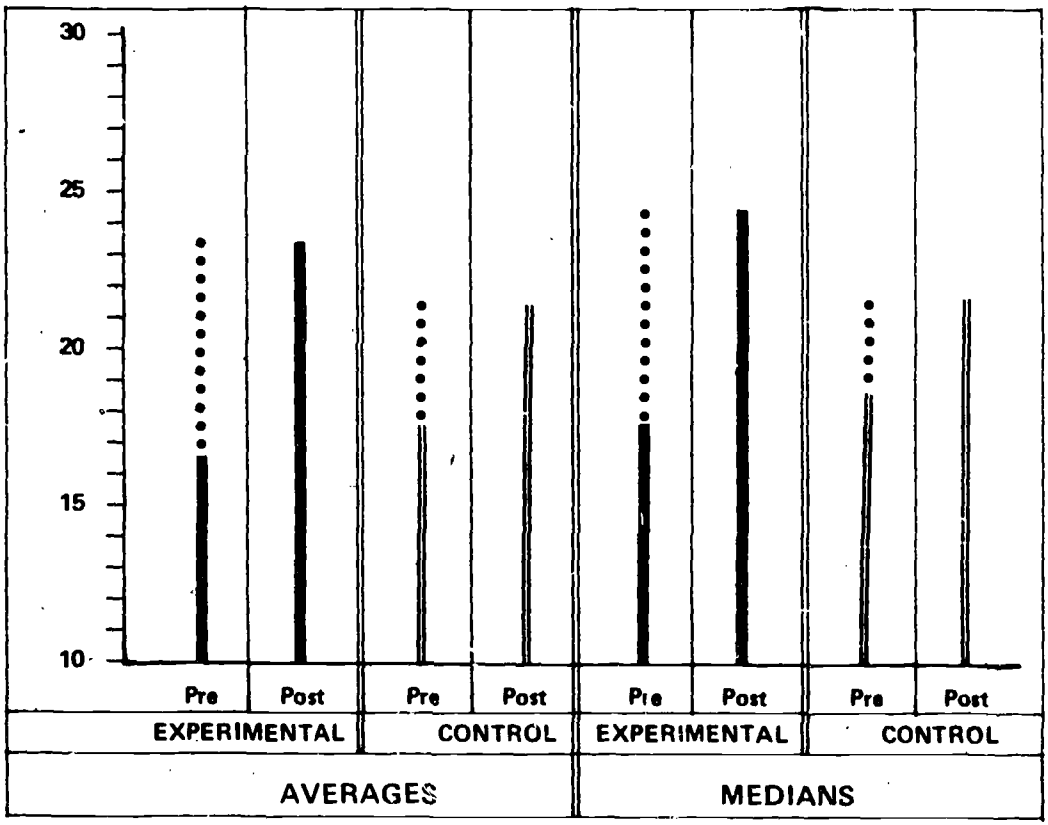
1. Pre to post tests of all experimental class children

EXPERIMENTAL CLASSES				
	PRE-TEST		POST-TEST	
	Averages	Medians	Averages	Medians
K1	16.694	17.815	23.45	24.315
K2	14.681	15.526	20.923	21.868
K3	14.379	15.631	21.284	21.815

2. Pre to post tests of all control class children

CONTROL CLASSES				
	PRE-TEST		POST-TEST	
	Averages	Medians	Averages	Medians
K1	17.712	18.75	21.3	21.75
K2	15.086	15.8	18.0	18.4
K3	15.206	15.8	18.593	18.85

K1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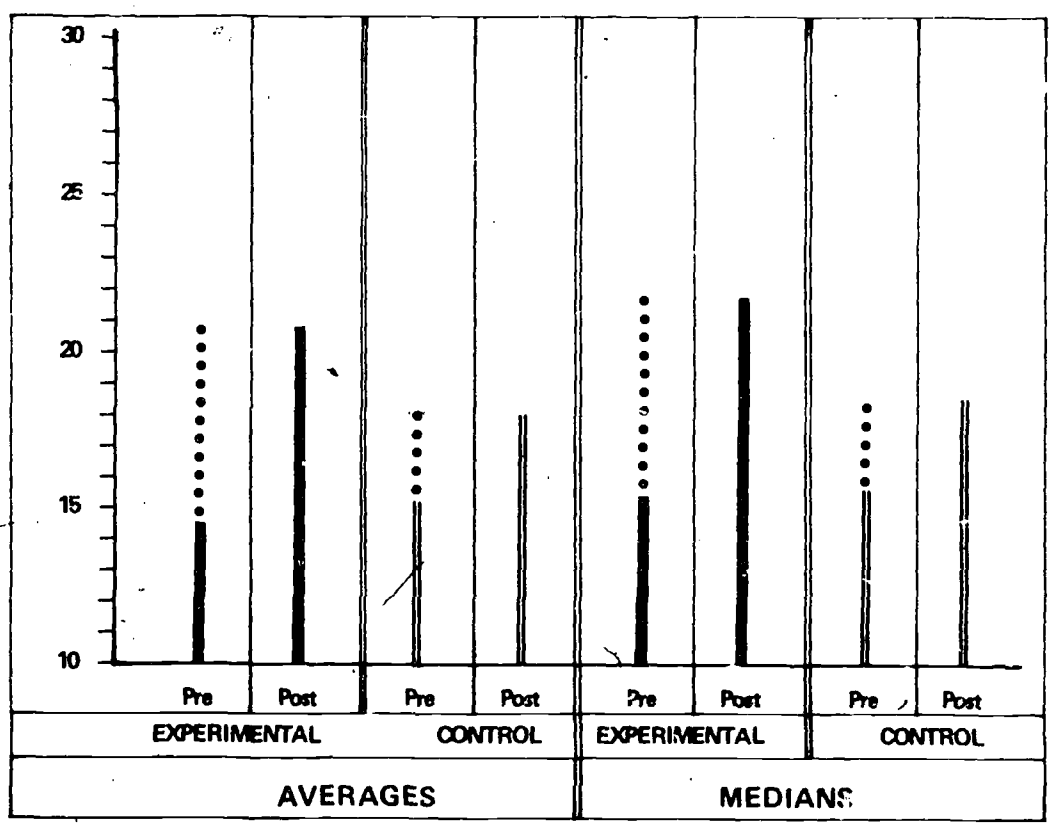
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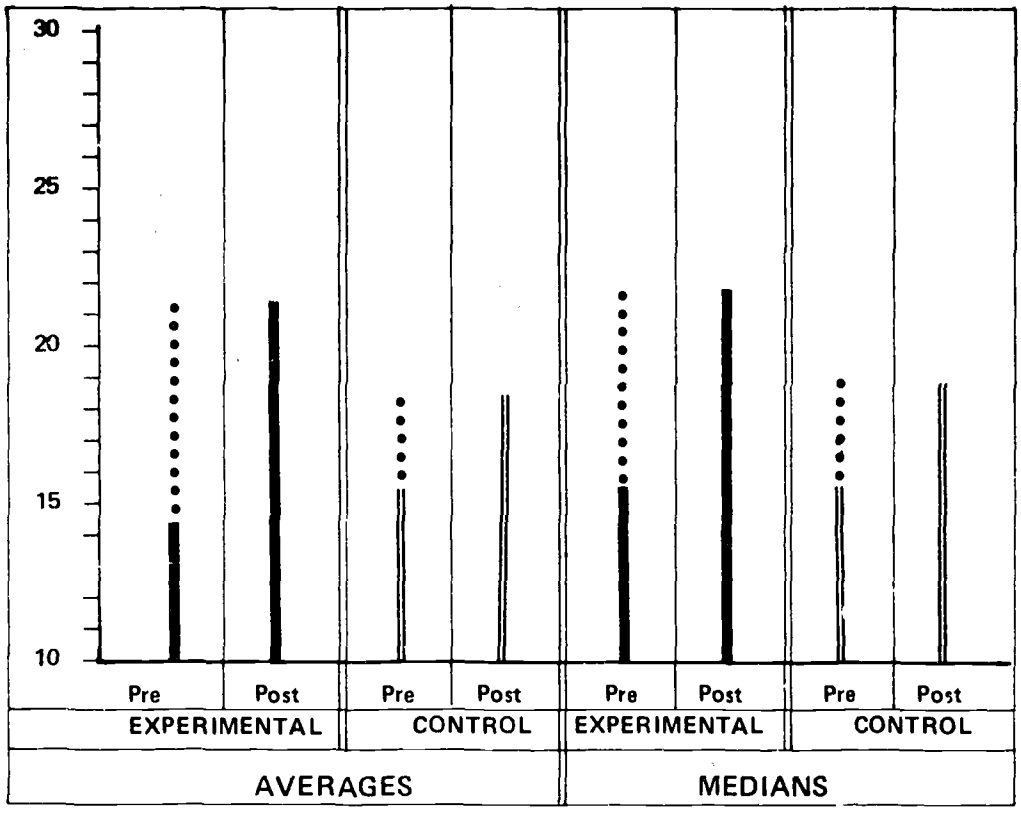
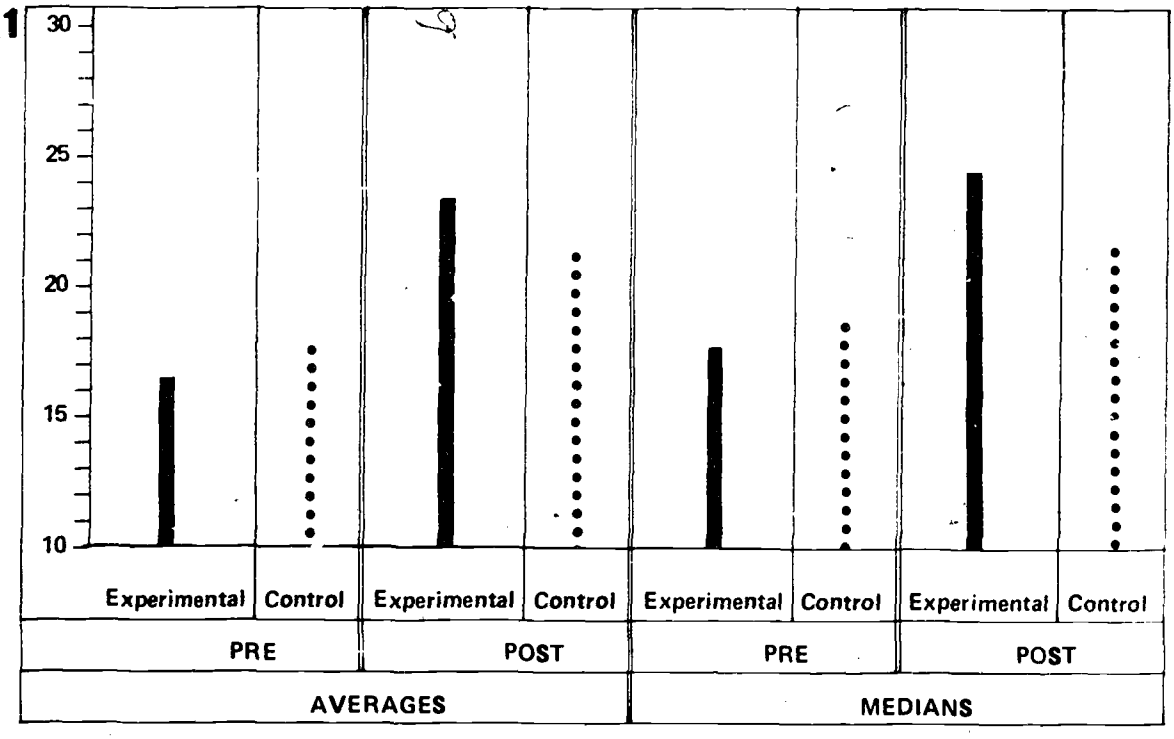
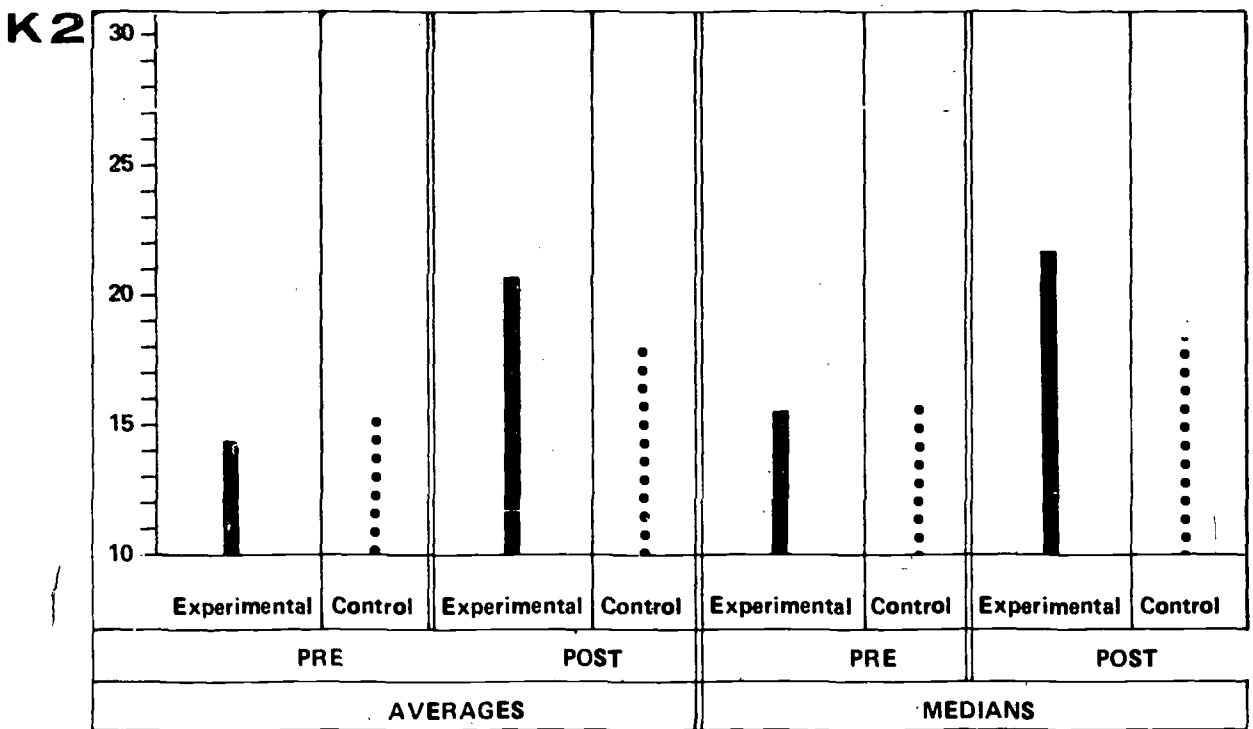


3. Pre to pre tests of experimental and control class children
4. Post to post tests of experimental and control class children.

K1

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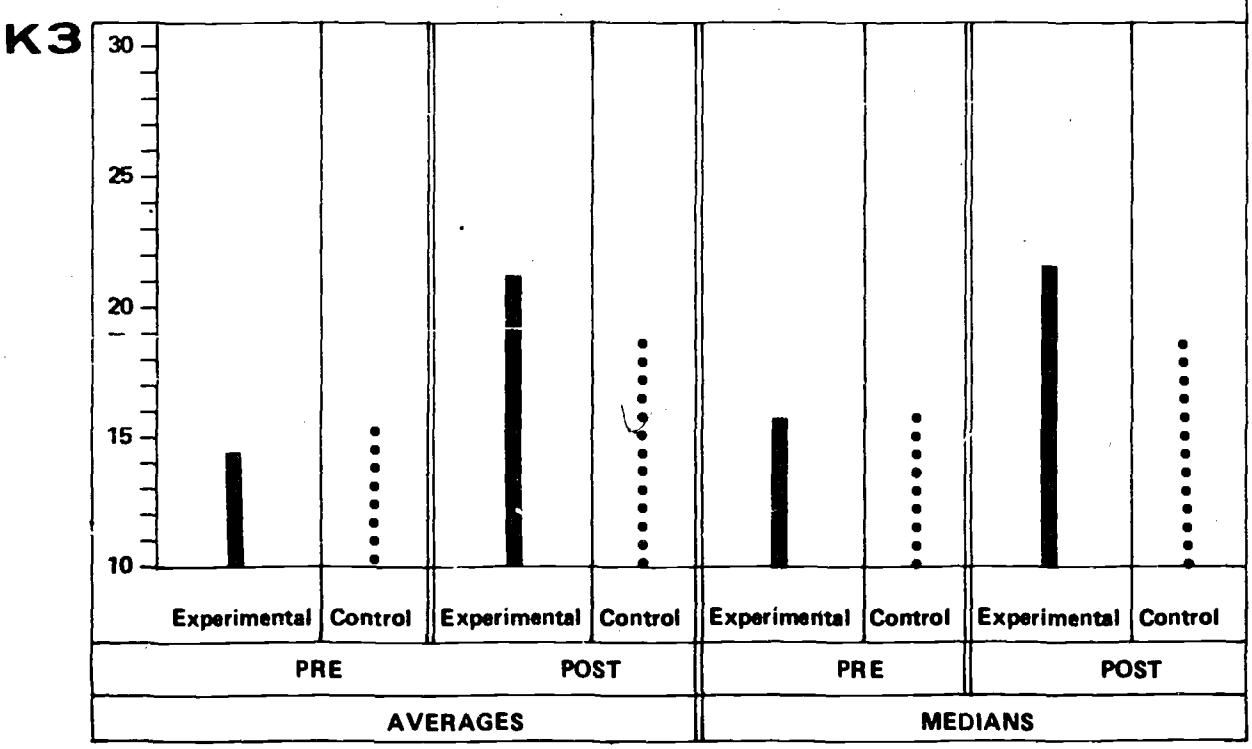
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5. Growth differential of experimental and control class children

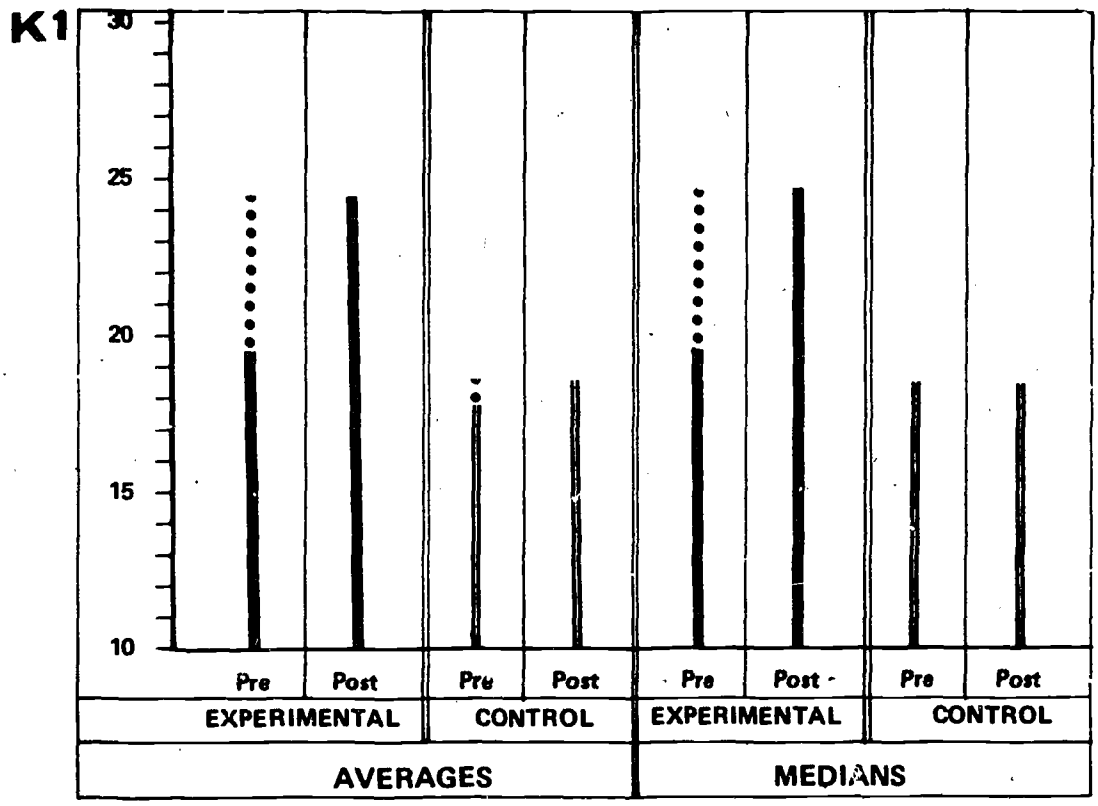
DIFFERENTIALS				
	EXPERIMENTAL		CONTROL	
	Averages	Medians	Averages	Medians
K1	6.756	6.5	3.588	3
K2	6.242	6.342	2.914	2.6
K3	6.905	6.184	3.377	3.05

FIRST GRADE

Data from the four first grade pilot classes has been processed as was the data from the kindergarten classes with the resultant general comparisons:

EXPERIMENTAL CLASSES				
	PRE-TEST		POST-TEST	
	Averages	Medians	Averages	Medians
K1	19.523	19.5	24.213	24.5
K2	17.118	17.5	21.285	22.5
K3	14.023	14.0	18.737	19.5

CONTROL CLASSES				
	PRE-TEST		POST-TEST	
	Averages	Medians	Averages	Medians
K1	17.886	18.25	18.386	18.25
K2	15.954	17.0	19.272	19.0
K3	12.793	12.5	15.227	15.0



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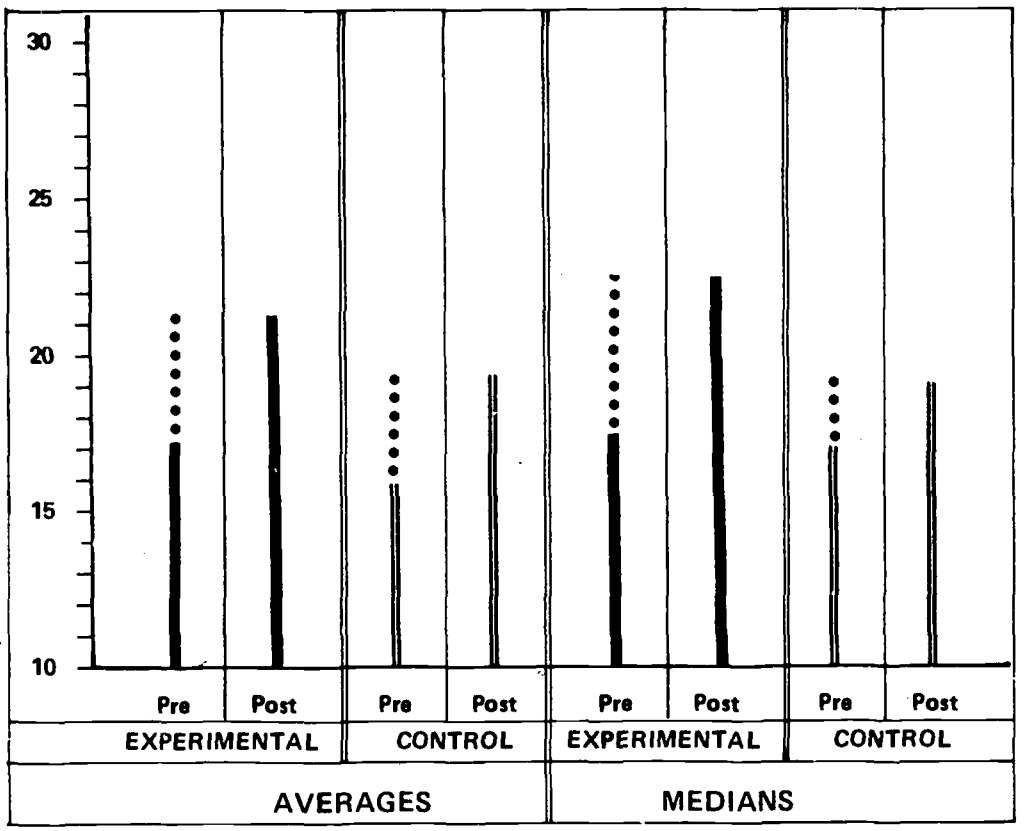
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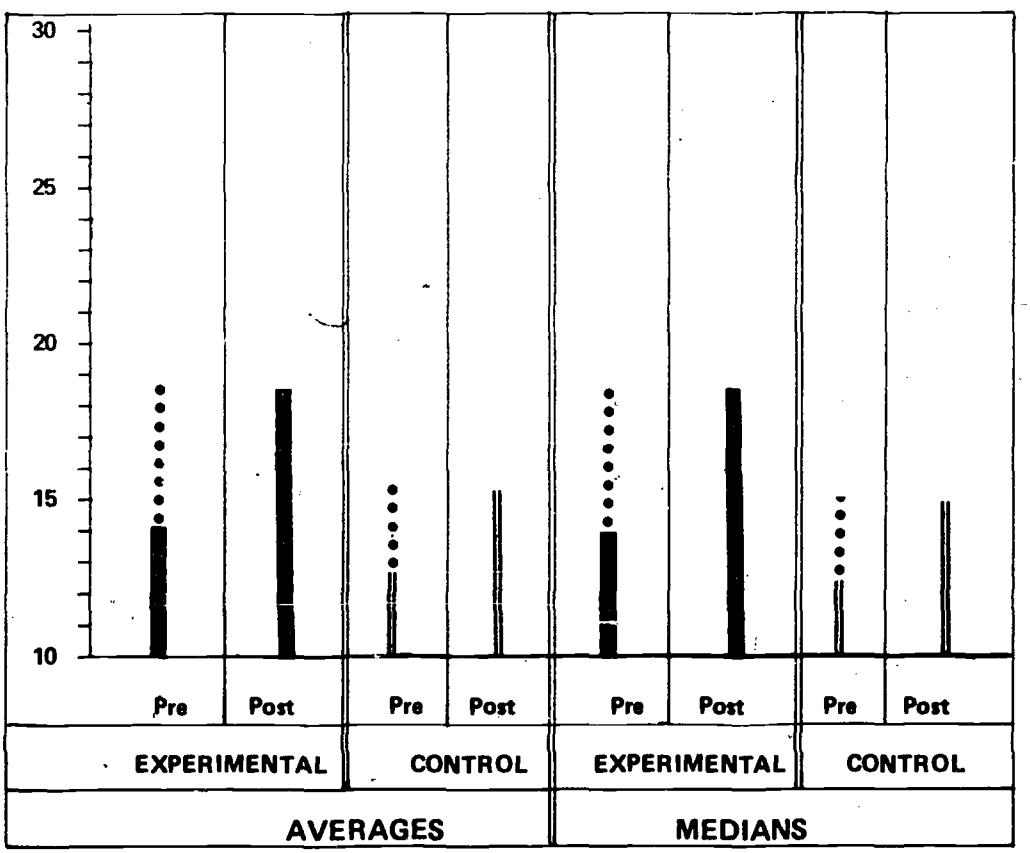
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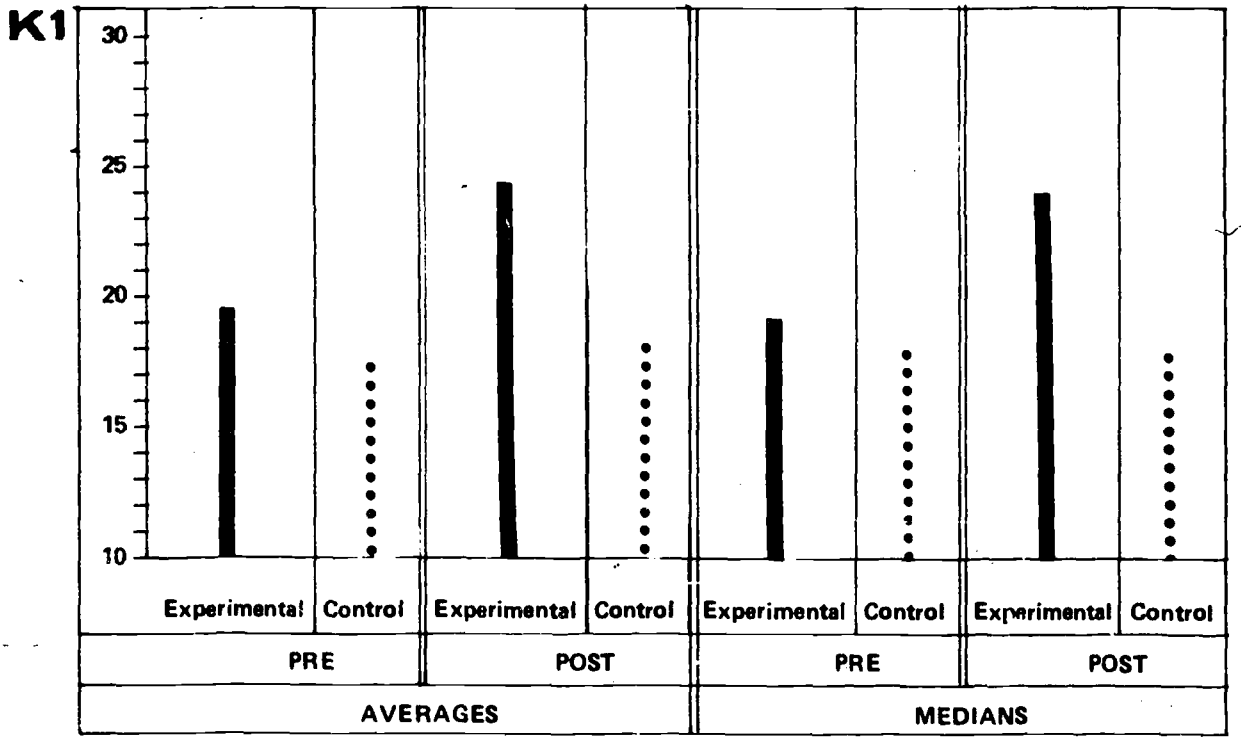
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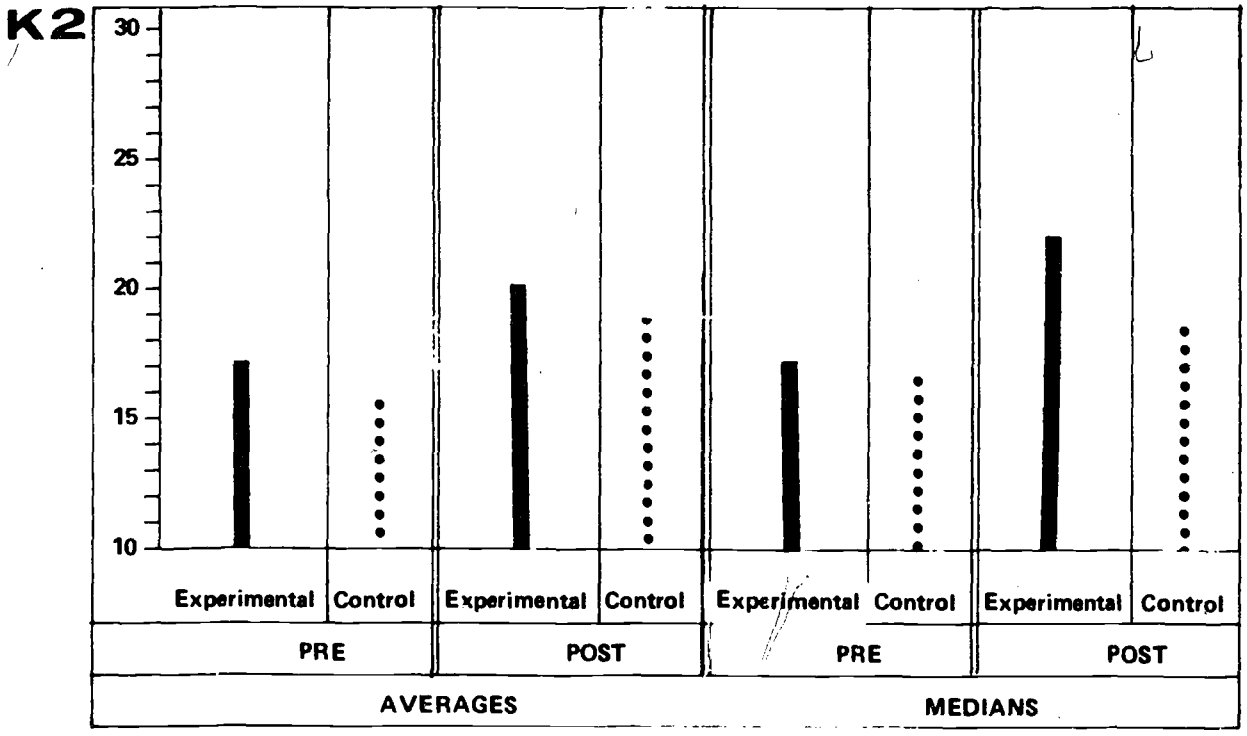
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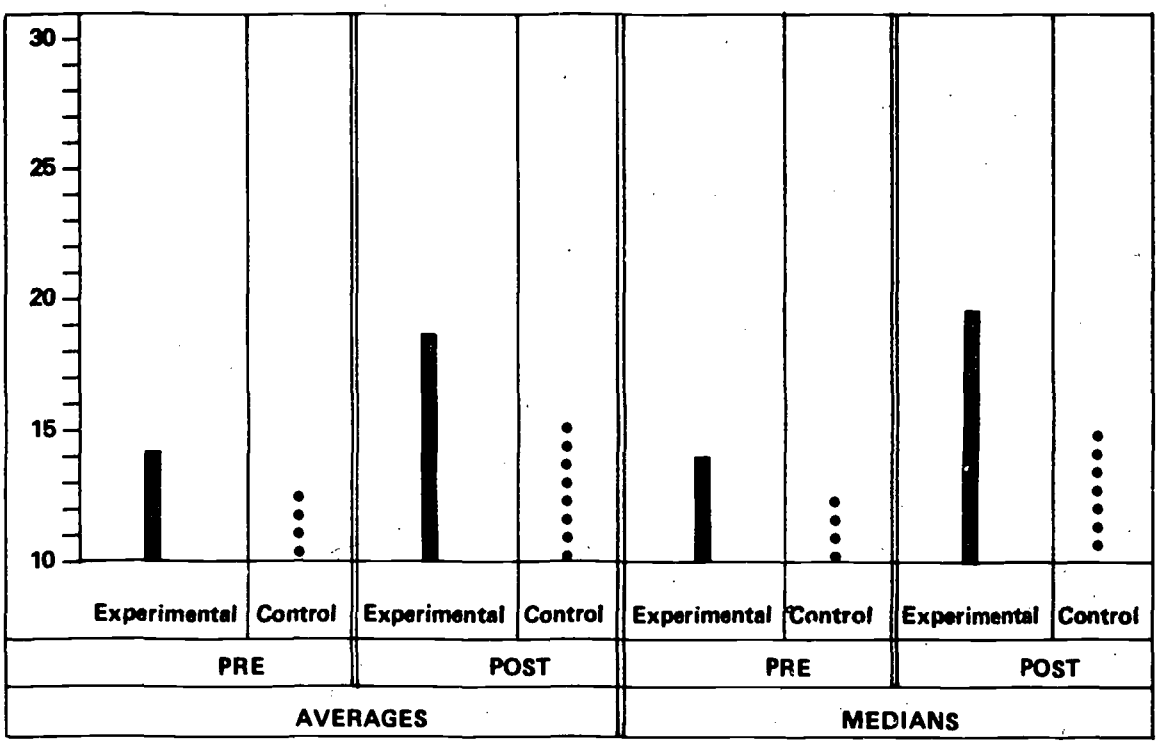

DIFFERENTIALS				
	EXPERIMENTAL		CONTROL	
	Averages	Medians	Averages	Medians
K1	4.69	5.0	0.5	0.0
K2	4.167	5.0	3.38	2.0
K3	4.714	5.5	2.434	2.5

The above figures are, however, not the **actual indicators** of the **effects** of **PROJECT SEE** since they include data from classes comprised of children coming from both the kindergarten experimental and control classes. We have therefore made additional comparisons of the following groupings:

GROUP	COMPOSITION
A	All children who were in experimental classes in both kindergarten and first grade
B	All children who were in control classes in both kindergarten and first grade
C	All children who were in experimental kindergartens and control first grades
D	All children who were in control kindergartens and experimental first grades

By comparing groups **A** and **B** we are able to determine the **growth** effected by **continued training** as opposed to not having been trained. The comparison of group **A** to group **C** will give some insight into the amount of **retention** of the training received in **kindergarten**. Comparing group A to group **D** and group **B** to **D** will give insight as to the value of **starting** training in kindergarten rather than deferring till the first grade and the comparison of groups **C** and **D** will show the relationship of retained training and deferred training.

GROUP A				
	PRE-TEST		POST-TEST	
	Averages	Medians	Averages	Medians
K1	21.142	21.5	25.017	25.0
K2	18.801	19.0	21.809	23.0
K3	16.491	17.25	20.157	20.5

GROUP B				
	PRE-TEST		POST-TEST	
	Averages	Medians	Averages	Medians
K1	17.81	19.25	18.086	17.5
K2	15.795	15.75	17.056	19.0
K3	11.969	10.5	15.143	13.75

GROUP C				
	PRE-TEST		POST-TEST	
	Averages	Medians	Averages	Medians
K1	20.0	20.5	18.9	18.5
K2	17.7	19.0	20.4	22.5
K3	17.8	18.5	17.2	21.0

GROUP D				
	PRE-TEST		POST-TEST	
	Averages	Medians	Averages	Medians
K1	15.333	15.0	23.153	24.0
K2	13.333	11.0	21.307	22.0
K3	9.583	8.5	17.538	17.09

It must be noted that these scores are from only a small sampling and hence would be suspect. They are offered only to indicate the results of the pilot study and will be re-evaluated next year when we have more sufficient data.

In comparing groups A and B we find that while the **differentials** of growth are not exceptional the **score differentials** were. It is interesting to note that the **post-test** scores of group B were **below** the **pre-test** scores of group A.

When comparisons are made between group A and groups C and D more startling differences emerge. Group C having been trained in kindergarten **pre-tested** on almost the same level as group A and, in the case of test K3 scored **higher.** This may be construed as an indication of the **retention of skills** developed in the kindergarten program. However, the **post-test** scores, while still **higher** than those of the group B children, did not, in the main, keep pace with those in group A. We feel that, their doing as well as they did, indicates **partial retention** of the **developed skills,** reinforcing our belief that a **single year's training is not adequate to really instill these skills in children.**

Group D emerges as the most interesting in terms of speculation. With scores the **lowest of all four groups in pre-testing they rose to nearly rival group A.** However, though their growth was **phenomenal** their final scores, both averages and medians, did not match their classmates in group A - especially in the most difficult K3 test - again serving as a possible indicator that the training received in kindergarten affected the response of the children on the first grade level.

In summation, we are gratified to note the differences of attainment of the trained children as opposed to those children who recieved no training as well as the apparent retention

of those children, who though trained in kindergarten, were not trained in grade 1 and of the very positive response of those children who received training only in the first grade.

Should this data be verified by the data from our expanded first grade program next year it could certainly support our belief in the importance of initiating the program at the earliest possible time and of the need for its continuation earliest possible time and of the need for its continuation into the higher grade levels.

Since any testing of this sort can only succeed in measuring the child at a particular time and, since children, of this age are so susceptable to outside distraction we felt that teachers' responses and opinions would add considerably to our insight as to the value of the program. Therefore, a scaled questionaire covering the skills and learnings we had hoped to achieve was submitted to the participating teachers. Their responses, to say the least,were most gratifying.

* 'Children are becoming more careful about looking and observing objects.'

* 'The interest created seems to help with response to given directions.'

* 'There was wonderful awareness that carried over into all areas anytime of the day.'

* 'I observed that the security of the familiar frame gave the slower children an impetus to attack reproducing figures they might have regarded as too difficult. They did become more visually aware as their confidence left them not afraid to observe in depth.'

* 'My children have often referred to **PROJECT SEE** when we are talking about looking at something ... I can see growth in visual awareness applied to other areas in the curriculum.'

* 'They were able to keep an open mind and pick up things in their surroundings that even I had taken for granted.'

* 'The ***(Out of) Sight*** game indicated this kind of observation when they began to describe a visual as, 'if that line were on the right I would have it', or, 'if it were upside down I would have had it.'

* 'A very common reading problem every year in first grade is words like WAS - SAW, ON - NO, etc. I was really able to detect a marvelous improvement in all reading groups concerning these word combinations.'

* 'The children verbalize the kinds of lines that letters and numbers are made of and they find it easier to write them... they can sit for longer periods of time and they can work to completion of activities.'

* 'My children are better observers of everything around them, due to **PROJECT SEE**. We thoroughly enjoyed this program and will be most eager to begin it again in September.'

* 'It has helped with writing, math, language arts, vocabulary and art.'

* 'Children enjoyed the program. It was instructional for learning in all areas.'

* 'In general the children became more observant of details in stories and in analyzing pictures. They became more aware of their environment as a whole, including lessons in other curriculum areas.'

* 'We use the language experience approach to reading and a change has been noted especially in the use of vocabulary.'

* 'Reinforced teacher recognition of impairment.'

* 'I feel that the SEE program helped them (children with visual perception difficulty) and other low scorers...'

* 'The children looked forward to the 'frame game' eagerly. Their interest increased as we progressed with each visual.'

* 'Children that became frustrated or confused with a given task or situation were greatly relieved when we proceded to solve it as we did with a visual.'

* 'Number reversals seemed more easily remedied this year.'

* 'Lines children draw (are) more refined and precise.'

* 'Youngsters who were shy and withdrawn ... were able to come up to the visual and quite confidently describe it.'

* 'Children ... are better able to verbalize what they see.'

* 'Children who usually do not respond were anxious to give their ideas.'

* 'Beautiful!'

* 'It increased a desire to be more accurate and have more pride in what they did.'

* 'In general - there is a great deal of confidence exhibited by the children in all of their work, satisfaction with their results, and self-correction.'

* 'Abstract recognition and printing much improved. Self-correction is evident in other activities and there seems to be less fear in making a mistake. All children try a task with a positive attitude.'

FINDINGS

The very positive responses of the participants of the SEE program are perhaps the best indicators that the program succeeds in its intent. But perhaps, even more significant is the wide and varied application it is enjoying.

PROJECT SEE has been designed essentially as a program for the development of the child's perception (primarily visual) toward a process of learning - to be given to an entire class simultaneously. Emphasis is put on attitude and skill development in terms of the total process rather than success in any one of the individual structured experiences.

* SEE has not been designed as a reading or pre-reading program YET it is being used as such by reading specialists.

* SEE has not been designed as a program to aid the handicapped YET it is being used broadly by teachers of the handicapped-for brain damaged and neurologically impaired children as well as those with visual impairments.

- **SEE has not** been designed as an **art program YET** by raising the awareness level of the child it changes his perception of and his reaction to an experience and of his pictorial manifestation of that experience.

- **SEE has not** been designed as a **language arts program YET** it significantly enriches the child's vocabulary and makes him more articulate.

- **Level 1** of the **SEE program has been designed** for use in the kindergarten **YET** it is being used with pre-school children and in classes up to and including the fifth grade. It is our feeling that LEVEL 1 should be the initial training of any untrained group at any age or grade level.

It is evident from the inquiries we have received from **New Jersey to California and from Maine to Florida** that perceptual lack is not a local problem. It is further evident that while there are many fine programs designed to **remediate perceptual deficiencies**, there appear to be no commercially prepared programs that cope with perceptual skill development in the format of a **total class involvement.** We feel, that our findings, minimal though they might be, indicate that **PROJECT SEE** could be one very possible resolution tomany of the problems we face today in the education of our children.

NEXT YEAR

We have opened a **'Pandora's box'** - and are faced with a dilemma. What do you do for children who now have learning skills that existing instructional materials do not take into account? The obvious and perhaps awesome answer is to design programs that will utilize these skills.

Our program, then, for next year, will of necessity follow **four** roads:

1. the **continuation of level I** of the program in the kindergartens where it is now being used and its increased dissemination in and out of state.

2. the **lateral expansion** of this year's pilot program on the first grade level in the Union Township schools and in those in and out of state schools desirous of continuing.

3. the **development of instructional materials and methodology**, using the skills generated by the project, for the academic disciplines on the first grade level.

4. the **design and piloting** of the project in grade two.

Further, since the project has grown far beyond all expectations thereby making personal individualized training for staff rather difficult we will design and produce a more comprehensive and definitive teacher's guide covering project theory and its replication. We will also make available an instructional tape/filmstrip presentation and TV tapes of kindergarten and first grade classes replicating the program and of instructal methodology to those districts desiring them and having the capability for their use.

We plan to issue, on a regular basis, **informational bulletins** as addenda to the new guide offering additional classroom activities and variations on the program which have been successfully used by cooperating teachers.

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